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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,182	01/11/2002	Sabina Houle	P 0276921 P12682	5990

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EXAMINER

DUONG, THO V

ART UNIT

PAPER NUMBER

3743

DATE MAILED: 04/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/042,182

Applicant(s)

HOULE ET AL.

Examiner

Tho v Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 18-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 18-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 3.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2 and 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claimed subject matter of “the step portion has a plurality of cutouts therein” renders the scope of the claimed indefinite since this claimed subject matter is not supported by the drawings. It appears in figure 5A that the step portion (520) does not possess the cutouts, but the step portions are spaced apart by the cutouts. Regarding claim 4, the claimed subject matter of “the step portion is irregularly shaped” renders the scope of the claim indefinite since it is not clear what shape is an “irregularly shaped”; therefore the examiner is not able to make a proper search on this subject matter.

Claim Rejections - 35 USC § 102

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-2,4,15,16 are rejected under 35 U.S.C. 102(a) as being anticipated by Lin et al. (US 6,188,578). Lin discloses (figures 1 and 2) an integrated heat spreader (13) arranged to be adhesively affixed with a sealant (15) to a substrate (11), comprising a rectangular body (131); a lip portion (132) substantially vertically oriented relative to the body portion; and a step portion adjacent to the lip portion (horizontal end portion of the lip portion); and a plurality of cutouts (133) formed on the lip portion. Lin further discloses (figure 1 and column 3, lines 15-17) that the heat spreader, which includes the step, is made of copper or aluminum.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Funari et al. (US 4,849,856). Lin discloses substantially all of applicant's claimed invention as discussed above except for the limitation that the step portion has a plurality of holes and the sealant is epoxy-based. Funari discloses (figures 1,3, 8, column 5, lines 2-5 and column 6, lines 24-29) a heat spreader (17) attached on a substrate (11) by leg portions (84) wherein the leg portions has a plurality of holes (85) for a sealant of epoxy based to fill up the hole to fixedly secure the heat spreader on to the substrate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Funari's teaching in Lin's heat spreader to fixedly secure the heat spreader on the substrate. Funari further discloses

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(column 3, lines 40-46) that an epoxy polymer (33) is placed between the chip (13) and the heat spreader (17) to secure the chip to the heat spreader. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Funari's teaching in the Lin's device to secure the chip to the heat spreader.

Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Houle et al. (US 6,469,381). Lin discloses substantially all of applicant's claimed invention as discussed above except for the limitation that the heat spreader's step is made of carbon/metal, carbon/carbon composite with fiber material. Lin discloses (figure 1) that the heat spreader (13), which includes the body, the lip and the step portion, is made of a unitary body of a single material. Houle discloses (figure 3, and column 3, line 67-column 4, line 10) that a heat spreader (305) is used to dissipate heat from a heat source (303) wherein the heat spreader (305) can be made of a carbon/carbon composite or carbon/copper composite comprising a matrix carbon fibers composite to obtain a high thermal conductivity heat spreader. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Houle's teaching in the Lin's heat spreader to obtain a high thermal conductivity heat spreader.

Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Toy et al. (US 5,931,222). Lin substantially discloses all of applicant's claimed invention except for the limitation that the heat spreader is coated with nickel. Toy discloses (figure 1, column 7, lines 7-21 and column 10, lines 26-32) that an entire surface of heat spreader (18) is coated with nickel and specifically plated with gold at the leg portion (25) of the heat spreader to prevent corrosion on the heat spreader. It would have been obvious to one having ordinary skill

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in the art at the time the invention was made to use Toy's teaching in Lin's heat spreader to prevent corrosion on the heat spreader.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kim (US 5,552,635) discloses a heat sink on top of a heat spreader.

Yoshida (US 6,271,058) discloses a heat sink with lip portions and step portions.

Tsukada (US 6,232,558) discloses a heat spreader that has a T-shaped leg mounted on a substrate.

Bivona et al. (US 5,990,418) discloses a heat spreader that has vertical lips and step portions adjacent to the lips.

Takano et al. (US 6,376,907) discloses a heat spreader that has peripheral lip portions and step portions adjacent to the lip portions.

Foster (US 5,504,652) discloses a unitary heat sink that has a plurality of holes on the leg portions.

Tosaya et al. (US 6,538,320) discloses a heat spreader having holes for rivet-like adhesive connections.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tho Duong whose telephone number is (703) 305-0768. The examiner can normally be reached on from 9:30-6 PM.

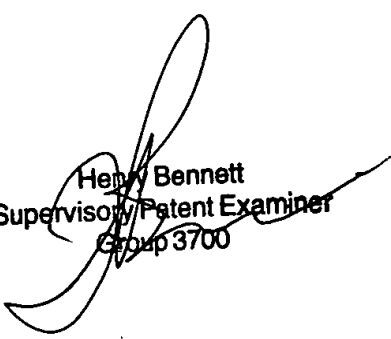
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennet, can be reached on (703) 308-0101. The fax phone number for the organization where this application or proceeding is assigned is (703)308-7764.

Any inquiry of a general nature or relating to status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0861.

Tho Duong

April 2, 2003


Henry Bennett
Supervisory Patent Examiner
Group 3700